

CLAIMS

1. A method of communicating between an access point of a short range rf network and a user terminal of the short range rf network, wherein the method comprises:
 - using a first short range rf transceiver at the access point for access communication with a user terminal for communicating information relating to establishment of a connection with the user terminal, and
 - using a second short range rf transceiver at the access point for user data communication for communicating user data with the user terminal.
2. A method according to claim 1, wherein the method comprises transferring the information relating to the establishment of a connection from the first transceiver to the second transceiver before communicating user data with the second transceiver.
3. A method according to claim 2, wherein the method comprises establishing a communication bus between the first and the second transceiver and transferring the information relating to the establishment of a connection over said communication bus.
4. A method according to claim 2 or 3, wherein the information relating to the establishment of a connection comprises identification information of the user terminal.
5. A method according to claim 1, wherein the method comprises
 - establishing a first communication link between the first transceiver and the user terminal, and communicating the information in relation to establishment of a connection with the user terminal over the first communication link, and
 - establishing a second communication link between the second transceiver and the user terminal, and communicating user data with the user terminal over

the second communication link.

6. A method according to claim 1, wherein the communication of information for establishment of a connection with the user terminal comprises inquiries.

5

7. A method according to claim 1, wherein the method comprises
disconnecting the connection between the first transceiver and the user terminal before communicating user data between the second transceiver and the user terminal.

10

8. A method according to claim 1, wherein the method comprises
discovering the user terminal having entered the coverage area of the access point, and only thereafter using the first short range rf transceiver at the access point for communication with the user terminal of information for establishing the connection with the user terminal.

15

9. A method according to claim 1, wherein the access point is in connection with a content provider and the method comprises
transferring content of the content provider via the access point to the user terminal by using the second transceiver.

20

10. A method according to claim 1, wherein the first and the second transceiver have different baseband addresses.

25

11. A method according to claim 2 or 3, wherein the information relating to the establishment of a connection comprises the baseband address of the user terminal, clock offset information informing the offset in the clock between the access point and the user terminal, and information on which services are supported by the user terminal.

30

12. A method according to claim 1, wherein short range rf network utilises short range rf communication according to the Bluetooth standard.

13. A method according to claim 1, wherein the user terminal is one of a mobile phone capable of communicating also over a cellular phone network, a personal digital assistant, a gamepad, a browser and a computer.

14. A method according to claim 1, wherein the method comprises
the access point performing access communication and user data
communication with a plurality of user terminals,
detecting the load of access communication and user data communication
at the access point, and
dynamically controlling the first and the second transceivers to perform one
of access communication and user data communication depending on the
detected load of the respective communications.

15. A method according to claim 14, wherein the method comprises
using more than two transceivers, and
dynamically controlling the number of transceivers performing access
communication and the number of transceivers performing user data
communication depending on the detected load of the respective
communications within the access point.

16. A method according to claim 14 or 15, wherein the method comprises
each of the transceivers communicating over a plurality of channels, and
dynamically controlling the number of channels that each of the first and the
second transceivers use to perform one of access communication and user
data communication depending on the detected load of the access point.

17. A method according to claim 16, wherein the method comprises
detecting an increase in the number of user terminals being in
communication with the access point, and

in response thereto increasing the number of channels used for user data communication and decreasing the number of channels used for access communication.

- 5 18. A method according to claims 14 or 15, wherein the method comprises
detecting an increase in the number of user terminals being in
communication with the access point, and
in response thereto increasing the number of transceivers used for user
data communication and decreasing the number of transceivers used for
10 access communication.
19. A method according to any of claims 14-18, wherein the method comprises the
total number of short range rf transceivers in use being the total number of
short range rf transceivers in the access point.
- 15 20. A method according to claim 1, wherein the first transceiver is dedicated to
inquiries and service database requests and is discoverable and connectable
to other short range rf enabled devices.
- 20 21. A method according to claim 1, wherein the second transceiver is dedicated to
user data transport and is non-discoverable and is non-connectable to other
short range rf enabled devices.
22. A method according to any of claims 14-18, wherein the dynamic control is
25 based on fuzzy logic control.
23. A method according to claim 1, wherein the method comprises
detecting the number of user terminals entering and leaving the access
point coverage area, and
30 using the number for creation of statistical data.

24. A method according to claim 23, wherein the method comprises performing the detection via the access communication.

25. A method according to claim 1 or 23, wherein the method comprises

5 detecting the rate of user data communicated within the access point within a certain period, and
 using the rate for creation of statistical data.

26. A short range rf communication system comprising an access point of a short
 10 range rf network and a user terminal of the short range rf network, wherein the access point comprises:

 a first short range rf transceiver for access communication with a user terminal for communicating information in relation to establishment of a connection with the user terminal, and

15 a second short range rf transceiver for user data communication for communicating user data with the user terminal.

27. A communication system according to claim 26, wherein the access point comprises

20 means for transferring the information relating to the establishment of a connection from the first transceiver to the second transceiver before communicating user data with the second transceiver.

28. A communication system according to claim 27, wherein the access point
 25 comprises

 a communication bus between the first and the second transceiver for transferring information relating to the establishment of a connection from the first transceiver to the second transceiver.

30 29. A communication system according to claim 26, wherein the information relating to the establishment of a connection comprises identification

information of the user terminal.

30. A communication system according to claim 26, wherein the system comprises
means for disconnecting the connection between the first transceiver and
the user terminal before communicating user data between the second
transceiver and the user terminal.

31. A communication system according to claim 26, wherein the system comprises
means for discovering when the user terminal enters the coverage area of
the access point, and for initiating access communication in response to having
discovered entrance of the coverage area by the user terminal.

32. A communication system according to claim 26, wherein the system further
comprises a content provider being in functional connection with the access
point, and
means for transferring content of the content provider via the access point
to the user terminal by using the second transceiver.

33. A communication system according to claim 26, wherein the first and the
second transceiver have different baseband addresses.

34. A communication system according to claim 26, wherein the information
relating to the establishment of a connection comprises the baseband address
of the user terminal, clock offset information informing the offset in the clock
between the access point and the user terminal, and information on which
services are supported by the user terminal.

35. A communication system according to claim 26, wherein the system
comprises means for short range rf communication according to the Bluetooth
standard.

36. A communication system according to claim 26, wherein the user terminal is one of a mobile phone capable of communicating also over a cellular phone network, a personal digital assistant, a gamepad, a browser and a computer.

5 37. A communication system according to claim 26, wherein
the first and second transceiver is adapted to perform access
communication and user data communication with a plurality of user terminals,
and the access point further comprises
means (IE, SE, FC) for detecting the load of access communication and
10 user data communication at the access point, and
means (CAL, RC) for dynamically controlling the first and the second
transceivers to perform one of access communication and user data
communication depending on the detected load of the respective
communications.

15 38. A communication system according to claim 37, wherein the access point
comprises
more than two transceivers, and
means (CAL, RC) for dynamically controlling the number of transceivers
20 performing access communication and the number of transceivers performing
user data communication depending on the detected load of the respective
communications within the access point.

25 39. A communication system according to claim 37 or 38, wherein each of the
transceivers is adapted to communicate over a plurality of channels, and the
access point comprises
means (CAL, RC) for dynamically controlling the number of channels that
each of the first and the second transceivers use to perform one of access
communication and user data communication depending on the detected load
30 of the access point.

40. A communication system according to claim 39, wherein the access point comprises

means (IE, SE, FC) for detecting an increase in the number of user terminals being in communication with the access point, and

means (CAL, RC) for in response to the detection of said increase increasing the number of channels used for user data communication and decreasing the number of channels used for access communication.

41. A communication system according to claim 37 or 38, wherein the access point comprises

means (IE, SE, FC) for detecting an increase in the number of user terminals being in communication with the access point, and

means (CAL, RC) for in response to the detection of increase increasing the number of transceivers used for user data communication and decreasing the number of transceivers used for access communication.

42. A communication system according to claim 26 or 38, wherein each transceiver comprises at least one Bluetooth chip for Bluetooth communication with other Bluetooth enabled devices.

43. An apparatus for short range rf communication with a user terminal, wherein the apparatus comprises:

a first short range rf transceiver for access communication with the user terminal for communicating information for relating to establishment of a connection with the user terminal, and

a second short range rf transceiver for user data communication for communicating user data with the user terminal.

44. An apparatus according to claim 43, wherein the apparatus is an access point of a short range rf communication system.